

# Plant Evaluation Notes

## *A Performance Appraisal of Hardy Sages*

There are approximately 900 species of *Salvia*, native from the temperate to subtropical regions of the world, and many hundreds of cultivated selections beyond this. The popularity of *Salvia* suggests that most gardeners have grown one or more sages at some time in their lives. Some gardeners save a spot each year for the colorful annuals—mealy-cup sage (*Salvia farinacea*) and scarlet sage (*Salvia splendens*), while others desire the more exotic, tender perennials such as anise-scented sage (*Salvia guaranitica*), roseleaf sage (*Salvia involucrata*) and Mexican bush sage (*Salvia leucantha*). For Northern gardeners the hybrid sage, *Salvia* × *sylvestris*, is likely the most common choice, but not the only one.

The traits that help us recognize *Salvia*—bilabiate flowers, square stems and aromatic foliage—are common to other members of the mint family (Lamiaceae). Beyond the familial traits are flowers in an impressive array of colors, including red, violet, blue, purple, orange,

yellow and white. The two-lipped, tubular flowers are typically subtended by bracts and produced in verticillasters—a false whorl of opposite cymes that appears to surround the stem. Diversity is apparent in foliage and habit as well. Leaves may be bold-textured to lacy, dark green to silvery-pubescent; and habits can be herbaceous or shrubby.

Sages are typically considered easy to grow and adaptable to a variety of growing conditions, although well-drained soil is important for successful cultivation. Full sun is also a common requirement, but some species do prefer partial shade. There are sages that bloom in each month of summer and many that will rebloom if old flowers are removed.

Sages are versatile plants that offer the gardener a myriad of flower colors and plant types for many landscape uses. The annuals and tender perennials provide a dramatic, seasonal display for gardens, bedding designs or containers, while the hardy perennials

provide color year after year. It can be enjoyable to experiment with some of the unusual sages that are grown around the world, but for long-lasting displays, select one of the hardy sages for Northern gardens.

### The Evaluation Project

Fifteen perennial *Salvia* taxa were grown and evaluated at the Chicago Botanic Garden (USDA Hardiness Zone 5b, AHS Plant Heat-Zone 5) from the spring of 1993 through the spring of 1998. The goal of the evaluation project was to compare ornamental characteristics and to determine the best hardy sages for the Midwest. The evaluation group contained sages with garden merit that were potentially winter-hardy in zone 5 and that were commercially available at the outset of the project.

Nomenclature follows *The New Royal Horticultural Society Dictionary of Gardening*, with synonyms noted in parentheses in Table 1. Review of the standard literature references concluded that there is no consensus on the assignment of cultivars to *Salvia* × *sylvestris*, *Salvia nemorosa* or *Salvia* × *superba*.

The sage trials were conducted in two distinct test sites. The plots in the primary site received approximately eight to 10 hours of full sun daily during the growing season and were openly exposed to wind in all directions. The well-drained soil consisted of one part composted leaves to four parts clay-loam soil, with a pH of 7.4. Turf grass pathways surrounded the beds on all sides, and the plots, each comprised of 16 plants, were separated within the beds by mulched strips. All taxa except *Salvia koyamae* were grown in these plots. Due to its cultural requirements, *Salvia koyamae* was grown in a secondary site that received partial shade most of the day. The plot had well-drained, clay-loam soil, a pH of 7.5 and shelter to the west from a group of low-branched trees and to the east from a brick building.

Maintenance practices were kept to a minimum to simulate home garden culture. Water was provided as needed, and no fertilizer was applied. The stems of half the plants



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*Salvia* × *sylvestris* 'Mainacht' (May Night) at Rosemoor Garden, England

## 2 Plant Evaluation Notes

from each taxa were cut back to the ground in mid to late summer to rejuvenate the plants. The remaining plants were left unattended as a control. A mulch consisting of shredded leaves and wood chips was placed around the plants for aesthetic purposes, water conservation and weed control.

### Observations

The sages were evaluated on five criteria: 1) floral display, including flower color, inflorescence size, flower production and bloom period; 2) habit display, including height and width measurements, foliage quality, habit quality and reseeding potential; 3) winter hardiness; 4) cultural adaptability; and 5) disease and pest resistance. Plant traits and overall evaluation specifics are shown in Table 1. A summary rating was assigned to each taxon based on flower production, plant habit, plant health and winter injury. A four-star rating signifies a good performance, whereas a one-star rating indicates a very poor performance.

Data was collected on the basic ornamental and performance criteria, the degree of remontant bloom, and the plants' response to cutting back stems in midseason.

The majority of sages opened up shortly after flowering, exposing the crown and creating an inferior display. Every year half the plants in each plot were cut back after the first flowering period, and in most cases, a second tier of stems was present at the base of the plants. This procedure was performed to determine how vigorous and resilient the plants were after the stems were cut to the ground and whether or not this encouraged a secondary bloom period. The seedling production of each sage was also monitored (Table 1).

The majority of sages were expected to be winter-hardy, so hardiness was not a primary evaluation consideration, except for *Salvia koyamae* and *Salvia hians*, which were listed as hardy to zone 6 and above.

The violet flowers of *Salvia hians* were borne on erect, branched stems that towered above the basal foliage. Flowers were produced abundantly the first year, with almost 100% coverage at peak. Flower production decreased on otherwise healthy plants each subsequent year, until in 1997 the peak bloom was 20%. Removing the spent flower stems did not encourage a strong rebloom,

and no reseeding was observed. The bold-textured foliage was light green above and glaucous underneath, up to 9 inches long and healthy throughout the growing season. The habit remained fairly tight and attractive all summer. Flower stems stayed upright during the bloom period but were cut back late in the summer to improve the ornamental quality of the plants. One-half of the plants were killed during the winter of 1995-96; the remaining plants were healthy in subsequent years. Japanese beetles were observed feeding on *Salvia hians* only in 1995.

The planting of *Salvia jurisicii* included plants with pink, pale blue, lavender and white flowers. Flower production was high for the first three years but declined markedly in 1996 and 1997 following several years of repeated winter injury and a general decline in plant health. No pruning was necessary, nor were any seedlings observed. The lacy, gray-green leaves and small, compact habit of *Salvia jurisicii* were good ornamental qualities. It did not, however, adapt to the clay-loam soils of the trial garden, perhaps because it is native to mountainous regions of Eastern Europe. Each year the plants began to decline in late

Table 1: Plant Characteristics and Performance Summary Ratings

Overall Rating	Salvia	Flower Color	Inflorescence Size	Flower Coverage <sup>1</sup>	Bloom Period	Height	Width	Seedlings Observed	Winter Injury
★★★★	<i>hians</i>	violet	12 in.	40-60%	late Jun-Aug; repeat in Sep	48 in.	48 in.	no	yes
★★	<i>jurisicii</i>	pink, lavender	3 in.	80-100%▲	late May-early Jul; repeat Aug-Sep	10 in.	20 in.	no	yes
★★★★	<i>koyamae</i>	pale yellow	7-12 in.	40-60%	mid Jul-early Nov	14-22 in.	spreading	no	yes
★★★★	× <i>sylvestris</i>	violet-blue	6-10 in.	40-60%	early to mid Jun-Aug; repeat in Sep	25-29 in.	30-44 in.	yes	no
★★★★	× <i>sylvestris</i> 'Amethyst'	light purple	7-12 in.	60-80%	mid Jun-early Aug; repeat to mid-Oct	36-42 in.	36-48 in.	yes	no
★★★★	× <i>sylvestris</i> 'Blauhügel' ('Blue Mound', 'Blue Hill')	blue	6 in.	80-100%	mid Jun-early Aug; repeat to mid-Oct	16-24 in.	28-40 in.	no	no
★★★★	× <i>sylvestris</i> 'Blaukönigin' ('Blue Queen')	purple-blue	7-10 in.	40-60%	mid Jun-early Aug; repeat to early Oct	18-24 in.	28-36 in.	yes	no
★★★★	× <i>sylvestris</i> 'Lubeca'	medium violet	8-10 in.	60-80%	mid Jun-mid Aug; repeat in Sep	24-28 in.	30-36 in.	yes	yes
★★★★	× <i>sylvestris</i> 'Mainacht' ('May Night')	deep violet	8-10 in.	80-100%	late May-early Aug; repeat to early Oct	27-30 in.	28-36 in.	no	no
★★★★	× <i>sylvestris</i> 'Ostfriesland' ('East Friesland')	violet-blue	8-10 in.	40-60%	early Jun-early Aug; repeat in Sep	20-24 in.	24-32 in.	yes	yes
★★	× <i>sylvestris</i> 'Rose Queen' ('Rosakönigin')	pink	6-8 in.	40-60%	mid Jun-early Aug; repeat into Sep-Oct	16-24 in.	24-36 in.	yes	yes
★★★★	× <i>sylvestris</i> 'Schneehügel' ('Snow Mound', 'Snow Hill')	white	6 in.	60-80%	early Jun-late Jul; repeat into early Oct	18-24 in.	24-32 in.	no	no
★★★★	× <i>sylvestris</i> 'Wesuwe' ('Vesuvius')	deep violet	6-10 in.	80-100%	early Jun-early Aug; repeat into early Oct	28-30 in.	36-48 in.	no	no
★★★★	<i>transsylvanica</i>	violet	7-12 in.	40-60%	late Jun-Aug; repeat in Sep-Oct	30-36 in.	36-40 in.	yes	yes
★★★★	<i>verticillata</i> 'Purple Rain'	purple	12 in.	60-80%	late Jun-Aug; repeat in Sep-Oct	20-26 in.	32-38 in.	no	no

Overall ratings: ★★★★★ good, ★★★★ fair, ★★ poor. Half-star ratings are included in table.

<sup>1</sup>Coverage at peak bloom, approximately 2-3 weeks after first flowers open.

▲1993-1995 only, reached 30% in remaining years due to a decline in plant health.

summer and entered the winter in poor condition. Health in subsequent years was usually rated poor to fair. One-half of the plants died in the first winter, and half the remaining plants died in the second winter. Plants were determined to be marginally hardy in zone 5 due to the lack of cultural adaptability.

*Salvia koyamae* was grown in a different site because it prefers shade and moist, rich soils. The original planting received approximately two hours of direct sunlight per day. As the plants grew and spread out of the original space, about half the plants received up to four hours of sunlight each day. Although not extravagant in flower coverage, the pale yellow blossoms added an interesting aspect to the late-summer and autumn landscape. Flower production on plants in the shade was approximately 50% less than on plants growing in more sun. Flowers were usually present in some amount up to the first killing frost. Plants did not require pruning because of the late flowering period. The hairy, bold-textured green leaves, to 6 inches long and 5 inches wide, were typically healthiest in the shadier site, although chlorosis was present on all plants in most years. The spreading nature of *Salvia koyamae* became obvious in the third season, and it formed a dense, somewhat irregular ground cover in our garden. Some open areas were present early in the season but were always filled in by midsummer. The first winter losses occurred in 1994-95, when almost 25% of the plants were killed. Regeneration was steady the following year, but approximately one-third of the plot was killed in the winter of 1996-97.

'Amethyst' was the tallest and most robust of the nine *Salvia × sylvestris* cultivars evaluated. Stems remained upright through the peak bloom period, but lax stems and open centers were usually observed in early July. Plants responded well to being cut back and reformed into smaller mounds by early August. The control plants were less resilient and rarely looked good in the late season. Rebloom was typically observed at 10%, and no difference in amount of rebloom was noted between the control and cut-back plants.

'Blauhügel' was unique in that its flowers were closest to blue, but unfortunately its habit was inferior to all other cultivars. In the first season the habits remained tight and compact, but in subsequent years the centers opened before peak bloom—earlier than any of the other cultivars. Flower production was typically high, but the decumbent stems at

peak bloom decreased the ornamental effectiveness of the floral display. Rebloom was usually measured at 10%, and cutting back the stems did not increase flower production. Plants were cut back in midsummer to expose the vigorous new shoots in the center of the plant. In most years the second growth flopped open again by early September.

Flower production on 'Blaukönigin' was usually in the midrange but was greatly reduced in 1997 to 20%. There was no difference in remontant bloom between the control plants and those that were cut back after first bloom. Plant centers flopped open by late June in most years, with a mix of relaxed and fallen stems. New shoots were vigorous after being cut back and filled in by late August to about half the height of the first stems. Powdery mildew was observed in the first year of the evaluation.

The violet flowers and rose-violet bracts of 'Lubeca' created an interesting two-toned effect. Flower production decreased dramatically during the course of the evaluation, dropping from a high of 80% down to 25% during the final season. Flower production was not increased by pruning after the first flower display, and many seedlings were observed each year. The habit of 'Lubeca' was a bit looser in the early season than the other cultivars, and the stems typically remained upright until early July. Plants responded well to being cut back and were much healthier than the control plants. Three plants died during the first winter, and the crowns of several plants were injured in the winter of 1995-96.

'Mainacht' was the top-performing cultivar of *Salvia × sylvestris*, receiving high ratings in all categories including flower production, habit quality and winter hardiness. The deep violet flowers were borne in profusion, often concealing the foliage completely for several weeks each year. Its flowers were the darkest of all and were always the first to open each spring, usually one week before 'Wesuwe'. Cutting the stems to the ground created a cleaner, more attractive display in the late season but did not increase flower production. The control plants had the same amount of rebloom, approximately 30%, but the messy appearance of the spent, flowering stems masked the new flowers and gave the impression of fewer blossoms. The habit of 'Mainacht' was particularly good in comparison to the other *Salvia × sylvestris* cultivars.

The vase-shaped habit held together and the stems remained upright throughout the season in most years. Foliage was dark green and healthy at all times. The cut-back plants were resilient and reformed to about half the size of the control plants by late summer.

The flower color and inflorescence size of 'Ostfriesland' was similar to 'Blaukönigin' and 'Lubeca'. Similarly, cutting back the stems did not increase rebloom. The foliage of 'Ostfriesland' was lighter green than that of other cultivars, and its stems began to flop by late June or early July. Control plants were not as vigorous or ornamental as the plants that were cut back. Crown damage was noted on many plants in the consecutive winters of 1994-95 and 1995-96.

Flower production on 'Rose Queen' was never high but had greatly decreased to 10% at peak by the final season. Many seedlings were observed in the plot, and by 1997 about half of the plants in the plot were seedlings of inferior quality to the original plants. Plants began to flop open in late June, and after cutting the stems back, the new growth had filled in by late July. Winter injury, ranging from crown damage to death, was observed in all years except the first and last winters. This was the most significant winter damage observed on the *Salvia × sylvestris* cultivars.

The white flowers of 'Schneehügel' were not as impressive in size or display as the other hybrid sages. No difference in flower production was observed on plants that were cut back. The rounded habit was similar to 'Blauhügel', but the centers did not open as early in the season.

'Wesuwe' was similar to 'Mainacht' in several aspects, but its flowers were a shade lighter and produced a week later. The floral bracts remained a rosy mauve for several weeks after flowering. Rebloom was usually between 20% and 30% on both the control and cut-back plants. 'Wesuwe' was a robust cultivar that rarely had lax or floppy stems or open centers. Control plants remained vigorous after flowering, and the cut-back plants quickly filled in with new growth. 'Wesuwe' was equal to 'Mainacht' in habit and floral display.

The dark green leaves and violet flowers of *Salvia transsylvanica* were the largest of all the sages. Flower production was not high, but axillary racemes flanking the terminal clusters added to the overall effect. Remontant bloom on cut-back plants was 20%, approximately twice as much as the control plants. The habit was robust and sprawling, with stems that





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*Salvia* × *sylvestris* 'Amethyst'

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*Salvia verticillata* 'Purple Rain'

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*Salvia koyamae*

remained mostly upright into midsummer. The plants with lax habits or fallen stems regained good forms by late summer, whether or not the stems were cut back. Cutting the plants back hard after flowering greatly increased the vigor and health of the plant in the late season. Several plants were killed during the winter of 1994-95, and minor crown injury was noted in 1996.

*Salvia verticillata* 'Purple Rain' was one of the very best sages and received high ratings for flower coverage, habit quality and winter hardiness. The violet-colored floral bracts remained ornamental after the purple flowers were gone, effectively extending the floral display for several weeks. 'Purple Rain' had the strongest rebloom, with 60% coverage noted in September and October. The habits remained tight throughout the summer in most years, and although some relaxed stems were periodically observed, cutting back was not required. No winter injury was noted.

### Summary

The hardy sages proved to be easy to grow and disease- and pest-resistant. Only *Salvia jurisicii* did not adapt to the soils and cultural conditions of the test site. No diseases or pests of significance were noted, although Japanese beetles and powdery mildew were occasionally observed. Flower production was typically high, and some degree of repeat

bloom extended the ornamental season into autumn. The only significant ornamental consideration affecting the sages was the decline in plant health and habit quality after flowering.

Cutting back the sages after flowering was the best way to improve the health and plant forms for the later season. Each year one-half of the plants in each plot were cut back to the ground to improve their appearance and to determine the degree of rebloom after the regeneration of stems. It was determined that, in the majority of cases, cutting the stems did not increase rebloom; however, the cut-back plants were more ornamental and were therefore perceived to be more floriferous than the control plants. Only *Salvia transsylvanica* showed increased flower production after pruning—about twice as much as the control plants. *Salvia verticillata* 'Purple Rain' was the only sage to maintain a high-quality habit throughout the season, with the control plants of 'Mainacht' and 'Wesuwe' remaining tidy in most years as well. Reseeding was a minor maintenance issue and not problematic for any of the sages, except 'Rose Queen'. Of the *Salvia* × *sylvestris* cultivars only 'Blauhügel', 'Mainacht', 'Schneehügel' and 'Wesuwe' did not produce seedlings.

The majority of sages were cold-hardy to at least zone 5. At the initiation of the trial,

*Salvia koyamae* and *Salvia hians* were expected to be borderline-hardy, but both proved to be winter-hardy in northern Illinois. Although both sustained winter injury, the remaining plants were healthy and vigorous in subsequent years. *Salvia jurisicii* also suffered serious winter losses that were attributed to poor health brought on by a lack of cultural adaptability.

The hardy sages are valuable plants for the perennial garden, providing long-lasting color and form and attracting bees, butterflies and hummingbirds. The hybrid sage cultivars combine well with other sun-loving perennials such as yarrows, daisies, coneflowers, daylilies and grasses, while the bold-textured leaves of *Salvia koyamae* bring a bit of the exotic to the shade garden. The bright flowers provide vertical accents in the summer border and enliven the garden with color all season long.

### Reading List

- Armitage, A.M. 1997. *Herbaceous Perennial Plants*, Second Edition. Champaign, Ill.: Stipes Publishing.
- Clebsch, B. 1997. *A Book of Salvia: Sages for Every Garden*. Portland, Ore.: Timber Press.
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